

IAP20Rsc'CP07PTO 28 JUN 2006

SEQUENCE LISTING

<110> Københavns Universitet
Louise Jørgensen
5 Pamela Magistrado
Thomas Lavstsen
Ali Salanti
Morten A. Nielsen
Trine Staalsø
10 Lars Hviid
Thor Theander
Anja Jensen

<120> COMPOUNDS USEFUL IN THE DIAGNOSIS AND
15 TREATMENT OF MALARIA

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	Ile Thr Asp Pro Asn Asp Gln Ala Thr Val Cys Arg Ala Ile Arg Tyr		
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	925		
	Ser Phe Ala Asp Leu Gly Asp Ile Ile Arg Gly Lys Asp Met Trp Asn		
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	Ile Asn Ser Asp Ala Lys Asp Leu Gln Asp Arg Leu Glu Lys Ile Phe		
	945	950	955
	960		
	Lys Thr Ile Asn Glu Lys Leu Pro Asn Glu Ile Gln Lys Arg Tyr Thr		
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	980	985	990
	Asn Arg His Gln Val Trp Arg Ala Met Lys Cys Ala Thr Lys Gly Ile		
	995	1000	1005
	1005		
	Ser Asn Asn Cys Asn Gly Ile Pro Ile Glu Asp Tyr Ile Pro Gln		
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	Arg Leu Arg Trp Met Thr Glu Trp Ala Glu Trp Tyr Cys Lys Lys Gln		
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	1040		
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 25 Lys Thr Val Thr Asp Val Ala Lys Ile Leu Gln Gly Glu Ala Asn Glu
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 Thr Met Leu Lys Asn Ser Ser Asn Gly Asn Asp Lys Asp Glu Ser Lys
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	Lys Ile Lys Glu Leu Glu Thr Lys Cys Asn Asp Cys Thr Val Ser Glu		
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	Ser Gly Thr Ser Asp Ala Thr Gly Asn Lys Thr Cys Asp Asp Lys Asp		
	1970	1975	1980
	Lys Cys Asp Glu Cys Lys Arg Ala Cys Thr Thr Tyr Lys Thr Trp Leu		
	1985	1990	1995
			2000

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<400> 4

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 20 35 40 45
 Gly Asn Leu Arg Asp Ala Lys Phe Tyr His Asp Tyr Ser Lys Leu Arg
 50 55 60
 Asp Ile Pro Arg Ser Pro Cys Asp Leu Asp Phe Trp Phe His Thr Asn
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 25 Val Trp Arg Asp Lys Ala Tyr Glu Arg Asp Pro Cys Tyr Gly Arg Gln
 85 90 95
 Ala Lys Asn Asn Tyr Asn Leu Glu Gly Ala Val Cys Thr Asn Ser Lys
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 Ile Lys Gly Asn Glu Asn Lys Ile Asn Asp Ile Gly Ala Cys Ala Pro
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	Lys Lys His Tyr Thr Tyr Ser Val Pro Arg Trp Val Asn Ser Tyr Leu		
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	Thr His Gln His Phe Ser Ser Asp Phe Ile Asn Ala Leu Glu Ala Phe		
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 Pro Pro Pro Ala Ala Thr Thr Pro Gly Val Lys Pro Pro Cys Asp Ile
 850 855 860
 5 Val Glu Lys His Phe Lys Asp Lys His Asp Asn Thr Gly Ala Ile Asp
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 His Cys Asn Pro Lys Lys Asp Tyr Pro Pro Trp Lys Asn Asp Lys Ser
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	Leu Leu Lys Thr Ala Leu Met Ser Ser Thr Ile Leu Trp Met Val Gly		
	2545	2550	2555
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	675	680	685	
	Gly Lys Pro Cys Asn Asn Asn Asp Val Ile Asn Ile Leu Leu Asn Arg			
	690	695	700	
20	Leu Glu Lys Gln Ile Asp Asn Cys Lys Lys His Glu Glu Lys Gly			
	705	710	715	720
	Glu Lys Pro Cys Val Asp Ile Pro Lys Leu Leu Asn Asp Glu Asp Glu			
	725	730	735	
	Asp Glu Asp Asp Asp Glu Thr Pro Arg Ala His Asn Pro Cys Val Asp			
25	740	745	750	
	Lys Asn Asp Ser Gln Pro Thr Lys Thr Val Ser Tyr Ile Ala Arg Gln			
	755	760	765	
	Met His Arg Arg Ala Lys Ala Gln Met Thr Lys Asn Ser Val Val Asp			
	770	775	780	
30	Gly Asp Asn Lys Leu Glu Gly Asp Ile Phe Lys Val Thr Phe Arg Asn			
	785	790	795	800
	Gly Gly Val Gly Lys Asn Leu Asn Gly Asp Ile Cys Lys Ile Asp Lys			
	805	810	815	
	Thr Tyr Ser Asn Asp Ser Arg Gly Thr Pro Thr Asp Gly Pro Cys Glu			
35	820	825	830	
	Gly Lys Gly Asp Arg Phe Lys Ile Gly Thr Asp Trp Gln Gly Asp Ser			
	835	840	845	
	Phe Val Asn Pro Gln Tyr Arg Gly Ile Tyr Met Pro Pro Arg Arg Gln			
	850	855	860	
40	His Phe Cys Thr Ser Asn Leu Glu Lys Leu Asp Val Ser Arg Val Ile			
	865	870	875	880
	Arg Asn Gly Asn Ala Ser Asn Ser Leu Leu Gly Asp Val Leu Leu Ala			
	885	890	895	
	Ala Lys Tyr Glu Ala Glu Arg Thr Lys Asn His Tyr Val Ser Lys Lys			
45	900	905	910	
	Glu Glu His Ser Glu Ala Cys Arg Ala Val Arg Tyr Ser Phe Ala Asp			
	915	920	925	
	Leu Gly Asp Ile Ile Arg Gly Lys Asp Met Trp Asp Lys Asn His Gly			
	930	935	940	
50	Glu Lys Lys Thr Gln Glu Asn Leu Glu Arg Ile Phe Ala Lys Ile Lys			
	945	950	955	960
	Glu Gln Leu Leu Asn Ser Ser Ile Lys Asp Lys Tyr Lys Asp Asp Asp			
	965	970	975	
	Lys Ala Thr Pro Lys Tyr Lys Gln Leu Arg Glu Asp Trp Trp Glu Ala			
55	980	985	990	
	Asn Arg Ser Gln Val Trp Glu Ala Met Gln Cys Pro Pro Lys Asn Gly			
	995	1000	1005	
	Thr Phe Pro Cys Lys Ser Asp His Thr Pro Leu His Asp Tyr Ile Pro			
	1010	1015	1020	

Gln Arg Leu Arg Trp Met Thr Glu Trp Ala Glu Trp Tyr Cys Lys Glu
 1025 1030 1035 1040
 Gln Ser Arg Leu Tyr Gly Glu Leu Val Glu Thr Cys Gly Lys Cys Met
 1045 1050 1055
 5 His Lys Gly Lys Cys Lys Gln Gly Asn Gly His Cys Val Thr Cys Lys
 1060 1065 1070
 Pro Ala Cys Glu Lys Tyr Lys Phe Ile Asn Thr Trp Gln Pro Gln
 1075 1080 1085
 Trp Lys Gln Met Glu Gln Lys Tyr Ser Gln Leu Tyr Glu Glu Ala Lys
 10 1090 1095 1100
 Lys Tyr Asn Asp Ser Ser Arg Lys Asp Thr Thr Asn Lys Asp Asp Tyr
 1105 1110 1115 1120
 Val Leu Gln Phe Leu Asn Lys Leu Leu Thr Gln Asn Lys Gly Asn Lys
 1125 1130 1135
 15 Thr Tyr Asp Thr Ala Glu Gly Tyr Val His Gln Glu Ala His Ile Ser
 1140 1145 1150
 Asp Cys Gln Lys Gln Thr Gln Phe Cys Lys Lys Arg Asn Gly Glu Ile
 1155 1160 1165
 Pro Ser Ser Asp Thr Glu Thr Asp Asn Asn Tyr Ala Phe Arg Pro Gln
 20 1170 1175 1180
 Pro His Asp His Asp Glu Val Cys Glu Cys Asn Thr Arg Gln Lys Thr
 1185 1190 1195 1200
 Lys Val Arg Lys Lys Lys Lys Val Asp Ala Cys Glu Met Ala Lys
 1205 1210 1215
 25 Thr Leu Leu His Asn Asn Asp Gly Thr Ile Arg Ile Gly Gln Cys Lys
 1220 1225 1230
 Arg Lys Asp Glu Gly Asn Ala Glu Tyr Pro Lys Trp Asp Cys Asn Ser
 1235 1240 1245
 Gln Ile His Thr Thr His Asn Gly Ala Cys Met Pro Pro Arg Arg Gln
 30 1250 1255 1260
 Lys Leu Cys Val Tyr Phe Phe Ala Asn Pro Ser Gln Ile Gly Ser Ile
 1265 1270 1275 1280
 Asn Lys Gln Asp Asn Leu Arg Lys Ala Phe Ile Ile Ser Ala Ala Ala
 1285 1290 1295
 35 Glu Thr Phe Arg Ser Trp Gln Tyr Tyr Lys Ser Lys Asn Gly Gly Glu
 1300 1305 1310
 Asn Leu Gln Thr Gln Leu Lys Asp Gly Thr Ile Pro Asp Asp Phe Lys
 1315 1320 1325
 Arg Gln Met Phe Tyr Thr Tyr Gly Asp Tyr Arg Asp Phe Leu Phe Gly
 40 1330 1335 1340
 Thr Asp Ile Ser Lys Gly Leu Gly Glu Gly Thr Ala Leu Glu Lys Gln
 1345 1350 1355 1360
 Ile Asn Ile Leu Phe Pro Asn Gly Val Arg Lys Ile Pro Asn Glu Lys
 1365 1370 1375
 45 Thr Arg Glu Lys Trp Trp Thr Asp His Gly Pro Glu Ile Trp Lys Gly
 1380 1385 1390
 Met Leu Cys Ala Leu Thr Asn Gly Leu Ser Glu Ser Glu Lys Lys Thr
 1395 1400 1405
 Lys Ile Phe Asp Asp Tyr Ser His Asp Lys Val Asn Gln Ser Lys Asn
 50 1410 1415 1420
 Gly Asn Pro Ser Leu Glu Asp Phe Ala Lys Lys Pro Gln Phe Phe Arg
 1425 1430 1435 1440
 Trp Phe Ile Glu Trp Ser Asp Glu Phe Cys Arg Glu Arg Lys Lys Lys
 1445 1450 1455
 55 Glu Glu Glu Val Glu Arg Asp Cys Lys Asp Glu Tyr Glu Gly Cys Glu
 1460 1465 1470
 Lys Glu Lys Asn Gly Lys Cys Val Thr Ala Cys Lys Ala Tyr Lys Glu
 1475 1480 1485
 Tyr Ile Thr Asn Lys Lys Glu Glu Tyr Asp Ser Gln Lys Gly Lys Phe

	1490	1495	1500
	Asp Val Glu Lys Thr Glu	Lys Lys Gln Gly Tyr	Glu Asp Tyr Ser Glu
	1505	1510	1515
	Lys Gln Ala Ser Glu Tyr Leu Lys Glu	Lys Cys Ile Lys Ser Ser Cys	1520
5	1525	1530	1535
	Asn Cys Met Lys Lys Val Thr Glu Ile Ser Asn Tyr Trp Thr Asn Pro		
	1540	1545	1550
	His Lys Thr Tyr Asp Thr Glu Asn Leu Gly Ile Lys Cys Glu Cys Pro		
	1555	1560	1565
10	Pro Ser Pro Cys Thr Ile Val Asp Gly Ile Leu Ser Pro Gln Asn Ser		
	1570	1575	1580
	Ser Ser Tyr Ala Glu Gly Cys Lys Trp Lys Tyr Gly Lys Met Ser Gln		
	1585	1590	1595
	Gly Gly Thr Glu Trp Asp Cys Ser Lys Lys Ser Gly Gly Glu Gly		1600
15	1605	1610	1615
	Asn Glu Asp Gly Asp Val Val Cys Ile Pro Pro Arg Arg Arg Arg Leu		
	1620	1625	1630
	Tyr Val Lys Asn Leu Gln Asp Leu Thr Gly Glu Glu Ser Leu Val Asp		
	1635	1640	1645
20	Leu Arg Lys Ala Phe Ile Lys Cys Ala Ala Ile Glu Thr Phe Phe Ala		
	1650	1655	1660
	Trp His Glu Phe Lys Lys Glu Lys Glu Arg Glu Glu Lys Glu Lys Asn		
	1665	1670	1675
	Glu Gln Asp Val Gln Tyr Lys Ser Ser Val Leu Glu Asn Leu Gln Lys		1680
25	1685	1690	1695
	Gln Leu Lys Asn Gly Glu Ile Asp Asp Glu Phe Lys Arg Gln Met Phe		
	1700	1705	1710
	Tyr Thr Phe Ala Asp Tyr Arg Asp Ile Cys Leu Gly Lys Asp Ile Gly		
	1715	1720	1725
30	Asn Asp Val Asp Gly Ile Asn Glu Lys Ile Asp Thr Ile Leu Gln Lys		
	1730	1735	1740
	Asn Gly Lys Pro Asn Asn Ile Glu Glu Tyr Lys Lys Trp Trp Gln Lys		
	1745	1750	1755
	His Gly His Glu Ile Trp Glu Gly Met Leu Cys Ala Leu Ser Tyr Asn		1760
35	1765	1770	1775
	Thr Glu Thr Lys Glu Met Asp Lys Glu Leu Arg Asn Lys Leu Thr Glu		
	1780	1785	1790
	Gln Lys Asn Gly Asn Lys Asn Thr Tyr Asp Thr Val Thr Ile Ser Gly		
	1795	1800	1805
40	Gly Pro Ile Gly Asn Thr Lys Leu Glu Lys Phe Ala Ser Arg Pro Pro		
	1810	1815	1820
	Phe Phe Arg Trp Leu Glu Trp Ala Asp Glu Phe Cys Arg Lys Arg		
	1825	1830	1835
	Thr His Lys Leu Glu Lys Ile Gln Asn Glu Cys Lys Gly Val Ser Gly		1840
45	1845	1850	1855
	Thr Asn Gln Cys Asp Asp Gly Phe Asp Cys Asp Glu Met Cys Pro		
	1860	1865	1870
	Lys Lys Asp Gly Ser Phe Glu Thr Phe Lys Cys Leu Ser Cys Ala Lys		
	1875	1880	1885
50	Ser Cys Arg Phe Tyr Lys Lys Trp Ile Ser Arg Lys Lys Glu Glu Phe		
	1890	1895	1900
	Asp Lys Gln Ser Lys Lys Tyr Glu Asn Glu Ile Asp Asp Val Lys His		
	1905	1910	1915
	Asn Ser Asp Asn Ile Tyr Gly Lys Asp Phe Leu Glu Thr Leu Asp Gln		1920
55	1925	1930	1935
	Gln Tyr Lys Ser Val Glu Leu Phe Leu Glu Lys Val Lys Gly Pro Cys		
	1940	1945	1950
	Ser Ile Asn Asn Asn Glu Glu Cys Lys Ile Asp Phe Asn Lys Pro		
	1955	1960	1965

Lys Asp Thr Phe Gly His Ala Lys Asn Cys Gly Pro Cys Ser Glu Ile
 1970 1975 1980
 Arg Phe Lys Cys Ile Glu Asp Asn Ser Asn Trp Val Thr Thr Asn Thr
 1985 1990 1995 2000
 5 Cys Asn Lys Thr Thr Phe Lys Phe Thr Glu Asp Asn Lys Asp Thr Lys
 2005 2010 2015
 Glu Asp Ser Glu Gln Leu Gly Met Leu Ile Ser Asp Asn Thr Val Gln
 2020 2025 2030
 Asn Phe Ala Asp Gly Leu Gln Asn Asp Cys Lys Asp Ala Asp Ile Phe
 10 2035 2040 2045
 Lys Gly Leu Arg Lys Asp Gln Trp Ser Cys Gly Tyr Phe Cys Asn Leu
 2050 2055 2060
 Asp Ile Cys Ser Leu Lys Thr Ser His Gly Glu Asn Asn Tyr Lys Gln
 2065 2070 2075 2080
 15 Asn Ile Leu Ile Arg Ala Leu Phe Lys Arg Trp Leu Glu His Phe Leu
 2085 2090 2095
 Glu Asp Tyr Asn Lys Ile Asn Asp Lys Ile Ser His Cys Met Lys Asn
 2100 2105 2110
 Gly Glu Gly Ser Thr Cys Ile Lys Gly Cys Glu Ile Lys Cys Asn Cys
 20 2115 2120 2125
 Val Ser Asn Trp Ile Lys Lys Thr Leu Glu Trp Glu Ile Val Arg
 2130 2135 2140
 Asp Arg Phe Phe Lys Gln Tyr Asn Val Asp Ser Glu Lys Ser Phe Thr
 2145 2150 2155 2160
 25 Val Lys Ser Phe Leu Glu Gln Ala Pro Phe Asp Ser Asp Val Gln Lys
 2165 2170 2175
 Ala Ile Lys Pro Phe Glu Lys Leu Arg Asp Phe Glu Asp Ser Ile Val
 2180 2185 2190
 Cys Asn Gly Thr Thr Ser Ala Arg Lys Glu Lys Gly Thr Glu Lys Asp
 30 2195 2200 2205
 Val Val Ile Cys Leu Leu Asp Lys Leu Gln Lys Gln Ile Glu Thr Cys
 2210 2215 2220
 Gln Thr Lys His Lys Glu Thr Ser Gly Asn Thr Cys Ser Pro Pro Pro
 2225 2230 2235 2240
 35 Asn Pro Asp Thr Gln Thr Asp Thr Pro Leu Pro Leu Glu Ser Phe Pro
 2245 2250 2255
 Pro Pro Phe Cys Asn Val Pro Pro Asn Pro Cys Gly Asp Lys Asp Ala
 2260 2265 2270
 Thr Asn Val Val Gly Val Glu Val Leu Ala Lys Glu Met Gln Glu Ala
 40 2275 2280 2285
 Ala His Lys Ser Met Leu Ser Arg Ser Ala Val Asp Ser Gly Lys Gly
 2290 2295 2300
 Asp Lys Gly Glu Ser Ser Ser Gly Lys Ser Ser Leu Glu Gly Asp Ile
 2305 2310 2315 2320
 45 Ser Leu Ala Glu Phe Lys Asn Gly Phe Asn Pro Ser Gly Leu Lys Asn
 2325 2330 2335
 Val Cys Gln Ile Thr Glu Lys His Ser Tyr Ala Asn Gly Ala Ser Lys
 2340 2345 2350
 Asp Pro Cys Asn Gly Lys Gly Asn Gly Lys Asp Gln Arg Phe Lys Ile
 50 2355 2360 2365
 Glu Thr Gln Trp Lys Asp Thr Gly Lys Ser Gly Lys His Val Asp Val
 2370 2375 2380
 Tyr Leu Pro Pro Arg Arg Glu His Ile Cys Thr Ser Asn Leu Glu Tyr
 2385 2390 2395 2400
 55 Leu Leu Lys Gly Asn Ser Asp Gln Ile Met Lys Val Gly Asn Asn Lys
 2405 2410 2415
 Ile Asn His Ser Phe Leu Gly Glu Val Leu Leu Ala Ala Lys Tyr Glu
 2420 2425 2430
 Ala Glu Phe Ile Lys Thr Asn Tyr Thr Arg Leu Asn Gly Gln Asn Asp

	2435	2440	2445
	Asn Gly Ala Lys Cys Arg Ala Met Lys Tyr Ser Phe Ala Asp Ile Gly		
	2450	2455	2460
	Asp Ile Val Arg Gly Arg Asp Leu Trp Glu His Asn Asp Phe Lys Lys		
5	2465	2470	2475
	Leu Glu Arg Asp Leu Val Lys Ile Phe Gly Lys Ile Lys Glu Gly Ile		
	2485	2490	2495
	Thr Asp Glu Thr Thr Lys Lys Gln Tyr Glu Lys Asp Asp Thr Asp Asn		
	2500	2505	2510
10	Lys Gln Leu Arg Cys Asp Trp Trp Glu Ala Asn Arg Asp Gln Val Trp		
	2515	2520	2525
	Glu Ala Met Gln Cys Lys Thr Thr Ile Pro Pro Val Thr Thr Ser Cys		
	2530	2535	2540
	Asp Thr Thr Thr Val Thr Pro Leu Val Asp Tyr Ile Pro Gln Arg Leu		
15	2545	2550	2555
	Arg Trp Met Met Glu Trp Ala Glu Trp Tyr Cys Lys Tyr Gln Ser Lys		
	2565	2570	2575
	Ala Tyr Ser Glu Leu Arg Lys Gly Cys Glu Asp Cys Arg Ser Trp Lys		
	2580	2585	2590
20	Cys Met Lys Gly Asp Ser Lys Cys Glu Asn Cys Thr Lys Ala Cys Lys		
	2595	2600	2605
	Asp Tyr Asn Ser Lys Ile Glu Pro Trp Lys Gln Gln Trp Thr Lys Ile		
	2610	2615	2620
	Lys Glu Lys Tyr Glu Glu Leu Tyr Lys Lys Ala Gln Asn Ser Asp Thr		
25	2625	2630	2635
	Ser Asn Ser Gly Thr Thr Tyr Pro Lys Asp Glu Lys Asp Val Val Ser		
	2645	2650	2655
	Phe Leu Ser Lys Leu His Glu Lys Asn Lys Asp Asn Lys Ile Tyr Tyr		
	2660	2665	2670
30	Thr Ala Ala Gly Tyr Ile His Gln Gln Ala Lys Tyr Leu Asp Cys Thr		
	2675	2680	2685
	Gln Gln Thr His Phe Cys Asp Lys Lys Asn Gly Glu Thr Leu Pro Ser		
	2690	2695	2700
	Gly Arg Asp Asn Asp Lys Tyr Ala Phe Lys Lys Pro Pro Lys Lys Tyr		
35	2705	2710	2715
	Glu Arg Ala Cys Lys Cys His Glu Lys Gln Glu Pro Pro Pro Pro Lys		
	2725	2730	2735
	Val Pro Glu Asp Ser Glu Asp Asp Arg Glu Arg Ser Glu Pro Gly Glu		
	2740	2745	2750
40	Asp Ala Leu Pro Val Leu Pro Pro Glu Glu Ile Glu Gln Glu Glu Glu		
	2755	2760	2765
	Pro Glu Glu Thr Ser Val Asp Thr Thr Gln Asp Glu Glu Glu Pro Ala		
	2770	2775	2780
	Ser Glu Gly Gly Pro Ser Gly Ser Pro Thr Glu Glu Ser Gly Glu		
45	2785	2790	2795
	Pro Arg Glu Asn Ser Asp Ser Ser Asp Pro Lys Pro Asp Gln Asn Pro		
	2805	2810	2815
	Glu Ala Asn Pro Glu Gln Thr Pro Ile Leu Lys Pro Glu Glu Ala		
	2820	2825	2830
50	Pro Pro Lys Ser Lys Pro Pro Asp Gly Asp Arg Gly Val Gly Arg Ser		
	2835	2840	2845
	Leu Gly Pro Thr Pro Arg Ser Glu Val Glu Pro Glu Glu Ser Glu Asn		
	2850	2855	2860
	Glu Asp Val Glu Asp Glu Asp Asp Glu Glu Glu Glu Asp Pro Asp		
55	2865	2870	2875
	Asp Asp Pro Glu Ala Glu Ser Glu Glu Asp Glu Asp His Gly Gly		
	2885	2890	2895
	Gln Glu Ala Glu Ala Val Pro Pro Gln Pro Gln Ala Pro Ala Pro Leu		
	2900	2905	2910

Pro Pro Pro Pro Pro Leu Pro Pro Leu Lys Thr Ala Leu Met Ser
 2915 2920 2925
 Ser Thr Ile Met Trp Ser Val Gly Ile Gly Phe Ala Ala Ile Ser Tyr
 2930 2935 2940
 5 Phe Leu Leu Lys Lys Pro Lys Ser Pro Val Asp Leu Ile Arg Val
 2945 2950 2955 2960
 Ile Asp Ile His Lys Gly Asp Tyr Gly Ile Pro Thr Leu Glu Ser Lys
 2965 2970 2975
 Asn Arg Tyr Ile Pro Tyr Val Ser Asp Thr Tyr Lys Gly Lys Thr Tyr
 10 2980 2985 2990
 Ile Tyr Met Glu Gly Asp Thr Ser Gly Asp Glu Lys Tyr Gly Phe Met
 2995 3000 3005
 Ser Asp Thr Thr Asp Ile Thr Ser Ser Glu Ser Glu Tyr Glu Glu Leu
 3010 3015 3020
 15 Asp Ile Asn Asp Ile Tyr Val Pro Gly Ser Pro Lys Tyr Lys Thr Leu
 3025 3030 3035 3040
 Ile Glu Val Val Leu Glu Pro Ser Lys Ser Asn Gly Asn Thr Leu Gly
 3045 3050 3055
 Asp Asp Met Val Pro Thr Thr Asn Thr Phe Thr Asp Glu Glu Trp Asn
 20 3060 3065 3070
 Glu Leu Lys His Asp Phe Ile Ser Gln Tyr Ile Gln Ser Glu Pro Leu
 3075 3080 3085
 Asn Val Pro Gln Tyr Asp Val Leu Lys Glu Leu Pro Met Asn Ile Val
 3090 3095 3100
 25 Gly Asn Val Leu Asp Asp Gly Ile Asn Glu Lys Pro Phe Ile Thr Ser
 3105 3110 3115 3120
 Ile His Asp Arg Asp Leu Asn Ser Gly Glu Glu Ile Ser Tyr Asn Ile
 3125 3130 3135
 Asn Met Ser Thr Asn Ser Met Asp Asp Pro Lys Tyr Val Ser Asn Asn
 30 3140 3145 3150
 Val Tyr Ser Gly Ile Asp Leu Ile Asn Asp Ser Leu Ser Gly Gly Lys
 3155 3160 3165
 Pro Ile Asp Ile Tyr Asp Glu Val Leu Lys Arg Lys Glu Asn Glu Leu
 3170 3175 3180
 35 Phe Gly Thr Asn Tyr Lys Lys Asn Thr Ser Asn Asn Asn Val Ala Lys
 3185 3190 3195 3200
 Leu Thr Asn Ser Asp Pro Ile Met Asn Gln Leu Asp Leu Leu His Lys
 3205 3210 3215
 Trp Leu Asp Arg His Arg Asp Met Cys Glu Met Trp Asn Asn Lys Glu
 40 3220 3225 3230
 Glu Val Leu Asp Lys Leu Lys Glu Gln Trp Asn Lys Asp Asn Asp Gly
 3235 3240 3245
 Gly Asp Ile Ser Ser Asp Ser Asn Lys Arg Leu Asn Thr Asp Val Ser
 3250 3255 3260
 45 Ile Glu Ile Asp Met Asp Asp Pro Lys Gly Lys Lys Glu Phe Ser Asn
 3265 3270 3275 3280
 Met Asp Thr Ile Leu Asp Asn Ile Glu Asp Asp Ile Tyr Tyr Asp Val
 3285 3290 3295
 Asn Asp Glu Asn Pro Ser Val Asn Asp Ile Pro Met Asp His Asn Lys
 50 3300 3305 3310
 Val Asp Val Pro Lys Lys Val His Val Glu Met Lys Ile Leu Asn Asn
 3315 3320 3325
 Thr Ser Thr Gly Ser Leu Glu Gln Gln Phe Pro Ile Ser Asp Val Trp
 3330 3335 3340
 55 Asn Ile
 3345